Thinker-CAD Project-3

- Photoresistor:

A photoresistor, also called a Light Dependent Resistor (LDR) or photocell, is a passive electronic component that changes its resistance based on the amount of light it's exposed to:

- Bright light: Resistance decreases (e.g., 100–500 ohms for a typical LDR like the GL5528).
- Dim light or darkness: Resistance increases (e.g., 10kΩ to several MΩ).

This makes photoresistors great for detecting light levels in applications like automatic streetlights, light meters, or your Arduino project where you're reading light intensity and controlling an LED's brightness.

How It Works

Photoresistors are made from a semiconductor material (often cadmium sulfide or cadmium selenide). When light photons hit the material:

- They excite electrons, increasing conductivity (lowering resistance).
- More light = more electrons = lower resistance.
- Less light = fewer electrons = higher resistance.

In a circuit (like your Arduino setup), the changing resistance alters the voltage across the photoresistor, which you measure to infer light intensity.

- Red LED:

A red LED (Light Emitting Diode) is a semiconductor device that emits red light when current flows through it in the forward direction. It's a common choice for Arduino projects due to its simplicity, low cost, and visibility. Typical specs for a basic 5mm red LED:

- Forward voltage: ~1.8–2.2V.
- Forward current: ~10–20mA (max 30mA usually).
- Wavelength: ~620–630nm (red light).